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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/625,704	07/24/2003	Ronald Wilklow	1857.1920000	9931
26111	7590	05/31/2005	EXAMINER	
STERNE, KESSLER, GOLDSTEIN & FOX PLLC 1100 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005			AMARI, ALESSANDRO V	
			ART UNIT	PAPER NUMBER
			2872	

DATE MAILED: 05/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/625,704

Applicant(s)

WILKLOW, RONALD

Examiner

Alessandro V. Amari

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 19-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 19-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 5/10/2005.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings (Figures 14 and 15) were received on 23 March 2005. These drawings are accepted.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-6, 8 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Smith US 6,395,433.

In regard to claim 1, Smith teaches (see for example, Figures 1A, 1C) a method of making a diffractive optical element comprising providing a substrate (14) that transmits light having wavelengths of about 100 nm to about 300 nm without substantial attenuation of the light as described in column 5, lines 29-43; forming an amorphous isotropic layer (12) on the substrate, which transmits the light at wavelengths in the ranges without substantial attenuation of the light; patterning the layer; and removing a portion of the layer from regions of the substrate based on the patterning, such that a diffractive optical element is formed wherein adjacent areas of removed and unremoved portions of the layer cause diffraction of transmitted light as described in column 9, lines 37-67 and column 10, lines 1-14.

Regarding claim 2, Smith teaches further comprising making the substrate from barium fluoride as described in column 6, lines 37-46.

Regarding claim 3, Smith teaches further comprising making the substrate from calcium fluoride as described in column 6, lines 37-46.

Regarding claim 4, Smith teaches wherein the forming step comprises forming the layer from silicon dioxide as described in column 3, lines 50-55 and column 6, lines 1-5.

Regarding claim 5, Smith teaches that the removing step comprises using a material that only removes the portions of the layer as described in column 9, lines 64-67 and column 10, lines 1-14.

Regarding claim 6, Smith teaches that the substrate acts as a stop to control a thickness of the layer as described in column 6, lines 38-43.

Regarding claims 8 and 20, Smith teaches that the forming step comprises forming the layer to a thickness of about 100 nm to about 300 nm as described in column 6, lines 27-29.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith US 6,395,433.

Regarding claim 7, Smith teaches the claimed invention except for the substrate having a thickness of about 1mm to about 6mm. It would have been obvious to one having ordinary skill in the art at the time the invention was made to manufacture a substrate with the claimed thickness ranges, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. One would have been motivated to manufacture a substrate with the claimed thickness ranges for the purpose of providing a stable and substantial base for other layers. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235

6. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith US 6,395,433 in view of Su US 5,982,545.

Regarding claim 19, Smith teaches the invention as set forth above but does not teach that the patterning step comprises forming a resist layer on the layer; exposing a pattern onto the resist layer, removing a portion of the resist layer based on the exposing; removing a portion of the layer based on the patterned resist layer; and removing a remaining portion of the resist layer.

Regarding claim 19, Su teaches that the patterning step comprises forming a resist layer on the layer; exposing a pattern onto the resist layer, removing a portion of the resist layer based on the exposing; removing a portion of the layer based on the patterned resist layer; and removing a remaining portion of the resist layer as shown in Figures 4a-4d.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the method as taught by Su for manufacturing the diffraction element of Smith in order to facilitate easier fabrication, higher volume production and lower cost as set forth in the abstract of Su.

7. Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith US 6,395,433.

Regarding claims 21-23, Smith teaches the invention as set forth above but does not teach regarding claim 21, that the providing step provides an optical element as the substrate or regarding claim 22 that the providing step provides a lens as the substrate or in regard to claim 23 that the providing step provides a mirror as the substrate. Official Notice is taken that it is notoriously old and well known in the lithography art to utilize optical elements as substrates. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide optical elements such as a lens or mirror as a substrate in order to provide for an integrated optical element which includes a diffractive component, thus simplifying optical system design.

Response to Arguments

8. Applicant's arguments filed 23 March 2005 have been fully considered but they are not persuasive.

The Applicant argues that Smith is not concerned with forming a diffractive optical element.

In response to this argument, the Examiner would like to point out Smith is a phase shift mask which employs constructive and destructive interference and as such

diffracts light and is thus a diffractive optical element. Further evidence that the device of Smith is a diffractive optical element is provided in column 1, lines 39-41 of Smith.

The Applicant further argues that the alleged patterned amorphous isotropic layer 12 in Smith cannot have at least the characteristic that the unremoved portions allow transmission of light without substantial attenuation of the light. Applicant cites Smith as teaching that the unremoved portions of the amorphous isotropic layer are discussed as having at least 5% transmission and are never discussed to have more than 15% transmission which fails to teach or suggest the feature of claim 1 that the amorphous isotropic layer allows transmission of the light without substantial attenuation of the light.

In response to this argument, the Examiner would first like to point out that nowhere in the specification does the Applicant define the term "substantial attenuation" in any terms of degree. Secondly, Figures 8 and 11 of Smith show transmission well over 50% over the claimed wavelength range for the element (including the substrate). Therefore, the diffractive optical element of Smith meets this limitation within the broadest reasonable interpretation of the meaning of "substantial".

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alessandro V. Amari whose telephone number is (571) 272-2306. The examiner can normally be reached on Monday-Friday 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on (571) 272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ava/llg
18 May 2005


MARK A. ROBINSON
PRIMARY EXAMINER